

IDSJ Working Paper 187

**Operational Performance & Resilience of Rajasthan's
Micro Enterprises amidst Covid-19 Crisis**

Varinder Jain

March, 2023



Institute of Development Studies, Jaipur, Rajasthan (India)

Operational Performance & Resilience of Rajasthan's Micro Enterprises amidst Covid-19 Crisis

Varinder Jain

March, 2023

Institute of Development Studies, Jaipur, Rajasthan (India)

The purpose of the Working Paper is to provide an opportunity to IDSJ faculty, visiting faculty, and research staff to sound out their ideas and research work before publication and to get feedback and comments. They can be cited or quoted only with full acknowledgment and bearing in mind that they are being circulated in preliminary form to encourage discussion and comments before publication.

March, 2023

Please send suggestions and comments to
S. Mohanakumar (mohanakumar.s@gmail.com)
Convenor, Publications

Institute of Development Studies

8-B, Jhalana Institutional Area

Jaipur-302 004 (India)

Phone : 91-141-2705726 / 2706457 / 2705348

Fax : : 91-141-2705348

E-Mail : idsj@dataone.in

visit us at : www.idsj.org

Printed at : Kumar & Company, Jaipur

Operational Performance & Resilience of Rajasthan's Micro Enterprises amidst Covid-19 Crisis

*Varinder Jain*¹

This paper examines operational performance and resilience of Rajasthan's micro enterprises amidst COVID-19 crisis. Owing to their limited size and scale of operation, these enterprises have experienced survival threats during the pandemic period. A detailed analysis of firm's operational performance in terms of business losses, growth and key challenges during COVID-19 crisis period is made. Question of resilience among micro enterprises remains a central concern and an inquiry into key dimensions is made. Incidence of resilience is further examined with Ordered Probit Model to infer key factors influencing firm-level resilience. The study is based on a primary survey of randomly selected 1000 micro enterprises spread across 10 industry groups in different districts of Rajasthan. Study finds that operational performance of micro enterprises has remained poor during the COVID-19 period. Similarly, they are also found to be fragile in terms of resilience that could have shielded these enterprises from adverse impact of COVID-19 pandemic.

Keywords: Micro Enterprise, COVID-19 Pandemic, Operational Performance, Resilience, Rajasthan, India

I. Introduction

The industrial sector in Rajasthan is dominated by micro enterprises²– out of a total of 26.87 lakh Micro, Small and Medium Enterprises (MSMEs), number of micro enterprises are 26.66 lakhs which account for 99.21 percent of the total MSMEs in the state.³ Despite their limited size and scale of operation, micro enterprises assume significance in Rajasthan economy due to their contribution to state industrial output and employment. However, the government policies such as demonetisation⁴ and the adoption of goods and services tax⁵ (GST) have not been to their advantage. Spread of COVID-19 pandemic with adoption of lockdowns⁶ and consequent disruptions in supply networks destabilised these enterprises. Several micro enterprises got closed and there have been others which have found it difficult to survive. They could not develop, over time, adequate cushion to safeguard themselves at times of crisis (GAME, 2022).⁷

In such a situation, two key questions have emerged: 1) what does operational performance of Rajasthan's micro enterprises during COVID-19 crisis signify and 2) how resilient have been the Rajasthan's micro enterprises when they faced the sudden shock of COVID-19 pandemic? Enquiries into these two questions are made with data collected through a detailed primary survey of 1000 micro enterprises representing ten major industries in Rajasthan.

Including this introductory section, there are six sections. Next section provides a brief review of relevant literature. Section III outlines database and methodology. Section IV examines COVID-19 impact on Rajasthan's micro enterprises. Section V examines incidence and determinants of firm-level resilience and Section VI sums-up the study.

II. Review of Literature

COVID-19 pandemic has affected economies across the globe (Jain and Singh, 2020). The world has experienced sharp decline in trade (UNCTAD, 2022a) with changing nature of foreign investment flows (Hayakawa et al., 2022). Economic future of countries being uncertain, organisations like IMF have remained conservative on global growth prospects (IMF, 2022). In fact, with Russia's invasion of Ukraine and lingering COVID-19 pandemic, global growth is predicted to slow down from 6.0 percent in 2021 to 3.2 percent in 2022 to 2.7 percent in 2023. Uncertainty caused by COVID-19 pandemic was of such high magnitude that studies like McKibbin and Fernando (2021) tried to model its impact under various scenarios. Imposition of stringency measures across the globe became the norm and countries adopted a variety of stringency measures to curb rapid spread of COVID-19 infections.⁸Owing to the imposition of severe stringency measures including curfews, lockdowns and restrictions on mobility, economic declines emerged as a consequence (Bajra et al., 2023).

COVID-19 infections were projected to be third leading cause of death in United States in 2020 (Kaye, 2021). There have been losses of employment and income during this period with worsening jobs crisis (ILO, 2021; OECD, 2021) and imminent dangers of increasing poverty and widening inequality (Alon et al. 2021). Disruption caused by COVID-19 pandemic has been so penetrative that it has impacted every sector. Health sector remained primarily burdened. Banking sector faced issues of repayment. Insurance segments faced uncertainty. Tourism and hospitality sectors witnessed complete halt. Schools and educational institutions faced closures and students have to cope up with educational losses through online classes. However, some sectors focusing on daily consumables witnessed somewhat stable growth during this period.

Micro enterprises across the globe remained exposed to survival challenges (UNCTAD2022b). In India, micro enterprises faced survival challenges due to rampant closures, labour flight and disruptions in supply networks (Rathore and Khanna, 2021).⁹Focusing on initial lockdown period (March 24 - 3 May, 2020), Indrakumar (2020) observes that lockdown has impacted significantly the activities of the MSMEs in India. This sector has faced acute cash crunch with rampant shutdown of businesses. There have been large scale job losses across all types of enterprises. Focusing on the same period, Mehta (2021) has examined the impact of lockdown on MSMEs in Punjab. It observes that losses emanating from lockdown has been around Rs. 40,000 crore. Similarly, Sharma and Rai (2022) examines the impact of COVID-19 on MSMEs. It observes a decline in turnover mainly due to restricted economic activity, fall in demand, workers shortage and disrupted supply chains. It notes a fall in informal employment but a slight rise in formal employment which appeared due to business commitment, workers shortage and worker availability at relatively lower wages.

In fact, government has adopted various measures to facilitate MSMEs during this period. Behera, et al. (2020) reviews the policy initiatives made by government to uplift

Indian MSMEs. Given the magnitude of losses emanating from COVID-19 shock, it urges for increasing fiscal stimulus for the MSME sector in an effort to achieve the vision of self-reliant India. Roy, et al. (2020) finds that small businesses experienced sharp contraction due to negative growth in sales. Losses of these businesses have been burgeoning. In such situation, the relief package announced by government to compensate for losses emanating due to shock of COVID-19 has remained inadequate which urges for devoting a serious attention to ameliorate the plight of Indian MSMEs. Similarly, Ghosh (2020) have examined the impact of government remedial measures at times of COVID-19 pandemic. It observes that the central government has introduced various measures like collateral free automatic loans, subordinated debt for stressed MSMEs, partial credit guarantee along with stock exchange listing of MSMEs. But, there have been a small number of firms that could actually gain from these schemes.

Still in the context of micro enterprises, two key issues continue to persist: first one hints at 'Operational Performance' and the second one at 'Resilience' during COVID-19 pandemic. In fact, Jain (2021a, 2021b) conceptualise the notion of 'Resilience' in the context of micro enterprises. It examines the incidence of resilience among sports equipment manufacturing enterprises in Jalandhar and Meerut. During COVID-19 pandemic, the notion of resilience got much wider attention. So, it would be better to examine the incidence of resilience and its influencing factors in much detail.

III. Database and Methodology

Data Description

Analytical insights derived in the study are based on primary survey¹⁰ data randomly collected from 1000 micro enterprises in Rajasthan. These micro enterprises are spread across ten industry groups: 1) agro and food products; 2) textiles; 3) handicrafts; 4) metals; 5) mineral-based; 6) stone-based; 7) engineering; 8) electronics; 9) readymade garments and 10) gems and jewellery. To identify a representative group of sample districts, two key criteria are adopted:

- 1). Manufacturing sector share in total GDP: Districts with a higher share of manufacturing sector in state GDP are shortlisted in first round.

- 2). Density of MSMEs in the district: Those districts which account for a relatively high share of MSMEs in total state MSMEs are selected as sample districts.

Table 1: District-wise Sample Size (Number of Micro Enterprises)

	Aj-mer	Al-war	Bha-rat-pur	Bhil-wara	Bika-Ner	Jai-pur	Jodh-pur	Kota	Pali	Udai-pur	All	%
Agro and Food Products	8	41	10	14	24	6	21	2	22	2	150	15.0
Textiles	25	45	0	13	31	35	0	1	22	5	177	17.7
Handicrafts	0	0	0	0	0	0	0	0	69	6	75	7.5
Metals	14	11	12	6	4	28	0	1	12	1	89	8.9
Mineral-based Industries	18	0	11	10	5	24	10	0	14	3	95	9.5
Stone-based Industries	0	0	1	0	0	0	81	3	0	0	85	8.5
Engineering	2	14	2	4	1	6	57	1	1	3	91	9.1
Electric Equipment	4	31	0	2	1	25	0	1	2	0	66	6.6
Readymade Garments	28	23	4	12	0	2	0	3	0	0	72	7.2
Gems and Jewellery	0	0	0	0	0	100	0	0	0	0	100	10.0
All	99	165	40	61	66	226	169	12	142	20	1000	100

Source: Primary Survey

Following these criteria, sample districts are identified and stipulated sample size of 1000 micro enterprises is distributed across these sample districts in proportion to the relative share of each district in state's total micro enterprises. In this sample, a relatively major share of micro enterprises belongs to textile industry and agro and food products industry. Micro enterprises in gems and jewellery industry account for 10 percent share and the lowest share is of micro enterprises in electrical equipment industry. Share of micro enterprises in readymade garments industry, handicrafts, stone-based industry and metals is 7.2 percent, 7.5 percent, 8.5 percent and 8.9 percent respectively (table 1).

Table 2: Percentage Distribution of Sample MSMEs vis-à-vis Selected Characteristics

		Rural	Urban	All
All		585 (58.5)	415 (41.5)	1000 (100.0)
Owner's Social Category	SC	111 (11.1)	22 (2.2)	133 (13.3)
	ST	9 (0.9)	5 (0.5)	14 (1.4)
	OBC/MBC	319 (31.9)	238 (23.8)	557 (55.7)
	General	146 (14.6)	150 (15.0)	296 (29.6)
Ownership Type	Male	500 (50.0)	341 (34.1)	841 (84.1)
	Female	85 (8.5)	74 (7.4)	159 (15.9)
Owner's Educational Status	Secondary	324 (32.4)	267 (26.7)	591 (59.1)
	Senior Secondary	102 (10.2)	70 (7.0)	172 (17.2)
	Graduation	137 (13.7)	67 (6.7)	204 (20.4)
	Post-Graduation	18 (1.8)	8 (0.8)	26 (2.6)
	Above Post-Graduation	4 (0.4)	3 (0.3)	7 (0.7)
Place of Work	Household	195 (19.5)	199 (19.9)	394 (39.4)
	Industrial	213 (21.3)	65 (6.5)	278 (27.8)
	Commercial	177 (17.7)	151 (15.1)	328 (32.8)
Nature of Work	Regular	486 (48.6)	373 (37.3)	859 (85.9)
	Seasonal	95 (9.5)	39 (3.9)	134 (13.4)
	Casual	4 (0.4)	3 (0.3)	7 (0.7)
Work for Large units	Yes	303 (30.3)	243 (24.3)	546 (54.6)
	No	282 (28.2)	172 (17.2)	454 (45.4)
Keep Accounts	Yes	493 (49.3)	296 (29.6)	789 (78.9)
	No	92 (9.2)	119 (11.9)	211 (21.1)

Source: Based on Primary Survey

Table 2 indicates that 58 percent of sample micro enterprises are situated in rural areas. Owners of 55 percent of sample micro enterprises belong to Other Backward Castes (OBCs) and Maha Backward Castes (MBCs). 30 percent owners of micro enterprises belong to General category. Share of owners belonging to Scheduled Castes (SCs) is also significant, but Schedule Tribes (STs) make a very minimal representation. 84 percent of sample micro enterprises are owned by males and females own only 16 percent of sample micro enterprises. 59 percent of owners of micro enterprises are educated till secondary level and 17 percent are having education upto senior secondary level. 20 percent owners of micro enterprises are educated till graduation level. Place of work of 39 percent of micro enterprises is within household. 28 percent are situated within industrial area and 33 percent are situated within commercial area. Nature of work of 86 percent of sample micro enterprises is regular. 13 percent of sample micro enterprises work on seasonal basis. 55 percent of sample micro enterprises are sub-contracting units and 79 percent of sample micro enterprises keep accounts of their business transactions.

Analytical Framework

Available literature on vulnerability exposure guides us that economic shocks are part of day to day life. These shocks do not get transformed into a vulnerable situation until and unless one does not have adequate resilience to withstand that shock (Chambers, 1989).

Given this insight, if one examines whether the sudden shock of COVID-19 pandemic got transformed into a vulnerable state, one needs to examine the level of resilience. But, 'Resilience' is a qualitative term that needs to be quantified. One may have high or low levels of resilience depending on its endowments and exposure to external world. In case of micro enterprises, we have devised resilience scale by keeping in mind all those aspects that play a key role in strengthening their capabilities to withstand economic shock and thus make them strong internally. These key constituents defining resilience scale for micro enterprises are outlined in Table 3 along with specific dimensions.

Table 3: Resilience Scale Components

	Broad dimension		Specific dimension
A	Resource adequacy	A	Sufficiency of working capital.
		B	Ability to raise funds when needed.
		C	Easy access to required quality raw material without monopoly price.
B	Technical edge	A	Knowledge and adoption of latest production techniques.
		B	Worker adoption and adaptability to new techniques.
		C	Ability to add efficiency and effectiveness in production process.
C	Market knowledge	A	Knowledge of market size, customers, their tastes and demands.
		B	Competitors' threat to potential business growth.
D	Product uniqueness	A	Product design as per customers' tastes & preferences.
		B	Ability to innovate in product design.
E	Commercial prudence	A	Ability to produce at low cost while maintaining quality standard.
		B	Ability to foresee future demand and arrange production accordingly.
F	Manpower planning	A	Adequate access to skilled / trained workforce.
		B	Possibility of outsourcing production process to external small units.
G	Networking	A	Ability to develop sound networks in input and output markets.
		B	Ability to widen market coverage.

Note: The responses to various queries under these broad dimensions are coded at the scale of five (one referring to nil/very low and five indicating very high).

Source: Jain (2021b).

In order to examine the determinants of firm's resilience, we have considered three models.

$$\text{Model 1} \quad R_i = \alpha_0 + OG_i + OE_i + OSC_i + OSL_i + \mu_i \quad I$$

where i denotes micro enterprise, α_0 is the intercept and μ_i is the error term. Model 1 hypothesises that firm-level resilience (R_i) is influenced solely by owner-specific characteristics such as owner's gender (OG_i), owner's education (OE_i), owner's social class (OSC_i) and owner's skill level (OSL_i).

$$\text{Model 2} \quad R_i = \alpha_0 + Age_i + Location_i + PoW_i + K_i + wLU_i + KA_i + \mu_i \quad II$$

where i denotes micro enterprise, α_0 is the intercept and μ_i is the error term.

Model 2 hypothesises that firm-level resilience R_i is influenced by firm-specific characteristics such as firm's age (Age_i), firm's location ($Location_i$), firm's place of work (PoW_i), capital size of firm (K_i), firm's practice of working for large units (wLU_i) and firm's practice of keeping accounts (KA_i).

$$\begin{aligned} \text{Model 3} \quad R_i = & \alpha_0 + OG_i + OE_i + OSC_i + OSL_i + Age_i + Location_i \\ & + PoW_i + K_i + wLU_i + KA_i + \mu_i \quad III \end{aligned}$$

where i denotes micro enterprise, α_0 is the intercept and μ_i is the error term.

Model 3 hypothesises that firm-level resilience R_i is influenced by both the owner-specific characteristics and firm-level characteristics as outlined above in Model I and Model 2.

Ordered Probit Model

Firm's responses to various resilience-related questions are recorded at the scale of 5 (1-very low and 5-very high). To summarise, responses to all the queries are averaged into a single value by assigning an equal weight to each query. Based on the distribution pattern of mean resilience value, three cut-offs are defined as low, moderate and high levels which are coded as 0, 1 and 2.

Since the dependent variable (resilience) remains inherently ordered, it differs from numerical values as ordinal responses have no natural unit of measurement especially when the survey questions are framed to cover the perceptions of respondents. In such situation, the use of Linear Regression technique is not appropriate as the dependent variable is coded as 0, 1 and 2 which is a rank or order and where the gap between first and second outcome is not the same as between second and third outcome.

A suitable econometric approach to analyse such ordinal response data may be 'Ordered Probit Model' (Becker and Kennedy, 1992) as the dependent variable of resilience has three outcomes (low, medium, high).

Let the micro enterprise be denoted as i such that $i=1, \dots, n$, where n is the number of micro enterprises. Let R_i be individual firm's resilience level. Let R_i^* ($-\infty < R_i^* < +\infty$) be the unobserved single latent variable indicating firm's resilience level. Let $X_i\beta$ be the explanatory variables and μ_i is the error term. X_i represents owner's and firm's characteristics such as owner's gender, owner's education, owner's social class, owner's skill level, firm's age, firm's location, firm's place of work, capital size of firm, firm's practice of working for large units and firm's practice of keeping accounts that may affect firm's resilience level. β is a vector of parameters.

The Ordered Probit Model assumes that R_i^* depends linearly on $\beta_i X_i$.

$$R_i^* = \alpha + \sum \beta_i X_i + \mu_i, i = 1, \dots, n \quad IV$$

$$\mu_i \sim N(0, 1)$$

Since R_i^* is unobserved, the relation between unobserved latent variable R_i^* and observed random variable R_i is:

$$R_i = 1 \text{ if } -\infty < R_i^* < k_1 \text{ (Low)}$$

$$R_i = 2 \text{ if } k_1 < R_i^* < k_2 \text{ (Medium)}$$

$$R_i = 3 \text{ if } k_2 < R_i^* < k_3 \text{ (High)}$$

$$R_i = J \text{ if } k_{j-1} < R_i^* < \infty \quad V$$

Parameters $k_j, j = 1, J - 1$, are cut-offs defining limits. K_0 and k_j are taken as $-\infty$ and $+\infty$.

The model is estimated using Maximum Likelihood. Based on probability function, log likelihood function is constructed. Let $P_i(R_i = J)$ be the probability that respondent firm i 's response is J . Being an ordinal variable, R_i is measured on scale $1, 2, \dots, J$, the probabilities associated with observed outcomes are:

$$P_i(\text{Outcome } R_i = J) = \Pr(k_{j-1} < R_i^* \leq k_j) = F(k_j - X_i\beta) - F(k_{j-1} - X_i\beta) \quad VI$$

where F is standard normal cumulative distribution function. J denotes number of possible outcomes and k_s indicate cut-offs. Model defines probabilities of outcomes and does not explain directly the relationship between observed random variable (R_i) and the regressor X_i .

Here, the Log Likelihood function is:

$$\text{Log } L = \sum_{i=1}^n \ln [P_i(R_i)] = \sum_{i=1}^n \ln [F(k_j - X_i\beta) - F(k_{j-1} - X_i\beta)] \quad VII$$

Log-likelihood is maximised with respect to element of β along with thresholds to give maximum likelihood estimations of sets of parameters.

Ordered Probit Model with J alternatives has one set of coefficients with (J-1) intercepts. Here, the dependent variable of 'resilience' has three alternatives. So, the model has one set of coefficients and two intercepts (3-1). Sign of each coefficient of regressors indicates whether dependent variable increases/decreases with independent variable. Also, while explaining the coefficients, the values of coefficients are not interpreted as they differ by scale factors; rather explanation is made by stating either more likely or less likely.

The marginal effect of an increase in a regressor on the probability of selecting alternative J is:

$$\delta p_{ij} / \delta x_i = F'(k_j - X_i \beta) - F'(k_{j-1} - X_i \beta) \beta_r \quad VIII$$

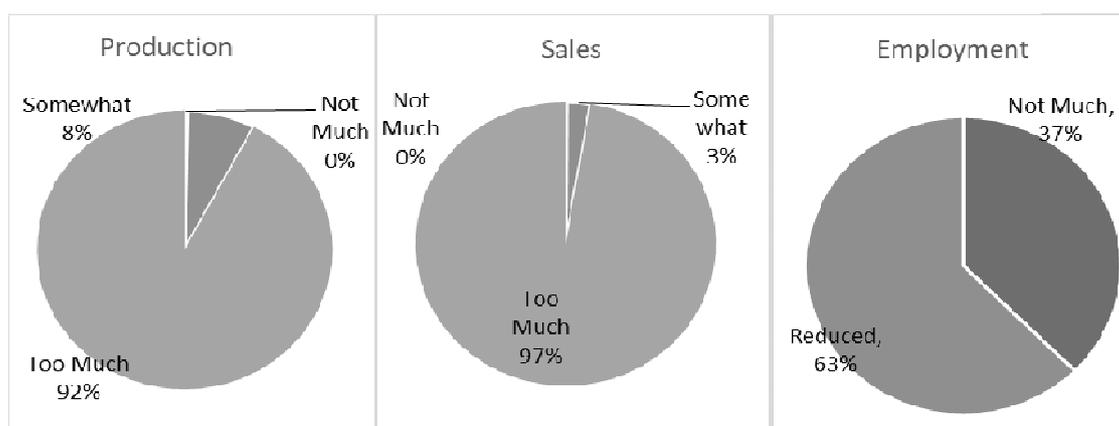
It needs to be noted that marginal effects of each variable on different alternatives sum up to zero as each unit increase in independent variable increase/decrease probability of selecting alternative J if one is more likely to be in one category than it is less likely to be in other categories. In this paper, there are three alternatives: low, medium and high, so there will be three sets of marginal effects, one of each alternative.

IV. COVID-19 Impact on Rajasthan's Micro Enterprises

Impact on Production, Sales and Workforce

With onslaught of COVID-19 pandemic, Rajasthan's micro enterprises experienced stoppage of production activity due to sudden imposition of stringent lockdown measures by the government. There have been various other restrictions as well. All these stringency measures had a direct impact on the volume of output of micro enterprises. Analysis of the field survey data revealed that COVID-19 had 'too much' impact on the performance of 92 percent of sample micro enterprises in Rajasthan. About 8 percent of micro enterprises reported that this impact had been mild to some extent (Figure 1).

Figure 1: Rajasthan's Micro Enterprises' Experience of COVID-19 Impact on Production, Sales and Employment



Source: Based on Primary Survey

Somewhat similar has been the experience of Rajasthan's micro enterprises regarding sales activity. 97 percent of sample micro enterprises reported that sudden onslaught of COVID-19 pandemic has had too much impact on sales. Across industries, all the sample micro enterprises in electric equipment industry and handicrafts industry witnessed too much impact on sales. In all other industries, this incidence has remained more than 90 percent with the lowest in Readymade garments (93.06 percent). 58.5 percent of rural micro enterprises reported too much impact on sales whereas 41.5 percent of urban micro enterprises reported this. In Handicrafts industry, 52 percent of female-owned micro enterprises reported too much impact on sales. Similarly, these are the micro enterprises with investment in plant & machinery below Rs. 1 lakh that account for a relatively high proportion.

Micro enterprises in handicrafts industry reported that the impact of COVID-19 pandemic on production had been "too much". More than 90 percent of micro enterprises in industries like mineral-based industries, metals, textiles, gems and jewellery and stone-based industries reported that the impact on production had been "too much". In other industries, viz. readymade garments, agro and food products, a relatively less proportion of micro enterprises reported "too much" impact. But, overall the proportion of micro enterprises, which have reported "too much" impact had been significant in Rajasthan. About 59 percent of micro enterprises located in rural areas reported "too much" impact of COVID-19 pandemic on the volume of production.

Besides production and sales, major impact of COVID-19 pandemic and lockdowns has been on workers. This period witnessed migration of workforce. As a consequence, a significant proportion of micro enterprises witnessed a reduction in employment. Field survey data indicated that 63 percent of sample micro enterprises in Rajasthan witnessed a fall in employment. Across industries, readymade garments, mineral-based industries, textiles, stone-based industries and engineering have witnessed a relatively higher fall in employment. 59 percent of rural micro enterprises reported a fall in employment. Similarly, micro enterprises with investment in plant and machinery below Rs. 1 lakh accounted for a relatively large fall in employment. But, such is not the case with micro enterprises with a relatively high investment in plant and machinery as a relatively lower proportion of micro enterprises reported fall in employment during COVID-19 pandemic. Similar observations are also made by Sharma and Rai (2022) which has reported fall in informal employment but some rise in formal employment due to business commitment of firms, shortage of informal workers and workers' availability even at lower wages.

B. Incurring of Losses Due to COVID-19 Restrictions

Owing to the cumulative impact of fall in production, sales and employment, micro enterprises reported incurring of losses during COVID-19 pandemic period. Field survey data reveals that 93 percent of sample micro enterprises had recorded losses during the pandemic. In industries like metals and handicrafts, almost all the micro enterprises have recorded losses. A small percentage of sample micro enterprises in agro and food industry and textiles made gains during this period. 58.1 percent of rural micro

enterprises had losses during COVID-19 pandemic with the highest loss reported by micro enterprises in industries like stone-based industries, mineral-based industries, engineering etc. Similarly, these are the micro enterprises with investment in plant and machinery below Rs. 1 lakh that account for a relatively high proportion of those reporting losses.

It is also observed that average loss per unit remains as high as Rs. 13.70 lakh. There are significant variations across sample industries. Average losses in industries like handicrafts, gems and jewellery, electric equipment, agro and food products, engineering, metals remain relatively low whereas in industries like stone-based industries, mineral-based industries, textiles and readymade garments, these losses have been considerably high (Table 4). Further analysis by location reveals that magnitude of losses among rural micro enterprises is relatively high. Similarly, these are the micro enterprises with a relatively high investment in plant and machinery that have reported a relatively high magnitude of losses.

Table 4: Magnitude of Average Loss (in Rs. '000) Reported by Sample Micro enterprises during COVID-19 Pandemic

Industry Type	Location		Ownership		Investment in P&M		
	R	U	M	F	Up to Rs. 1 Lakh	Rs. 1-10 Lakh	> Rs. 10 Lakh
Agro and Food Products	253.09	303.42	299.23	94.12	111.48	266.93	1905.56
Textiles	2299.19	3375.00	3452.56	262.58	109.92	2981.53	5275.41
Handicrafts	45.97	68.76	78.08	40.28	58.81	30.00	0.00
Metals	430.91	481.81	476.56	150.00	203.12	255.20	3933.33
Mineral-based	2605.81	10257.14	3268.89	566.67	200.00	1164.71	3678.67
Stone-based	2834.81	50025.00	4346.25	771.43	263.33	925.00	5627.36
Engineering	300.83	330.63	307.56	250.00	260.59	317.94	300.00
Electronics	167.00	178.25	161.02	1000.00	154.54	269.09	0.00
Readymade Garments	182.94	3800.00	1681.44	3046.18	116.31	3149.12	8080.00
Gems and Jewellery	200.00	112.34	121.03	81.32	113.25	0.00	0.00
All	1432.51	1283.30	1535.47	503.26	126.23	1012.16	4693.09

Note: R – Rural; U – Urban; M – Male; F – Female; P & M – Plant & Machinery

Source: Based on Primary Survey

C. Experience of Growth Deceleration

Incidence of growth deceleration among sample micro enterprises is examined for 2017-18 to 2021-22 period through trends in average annual growth rates of output. It may

be observed that sample micro enterprises across selected industry groups witnessed significant growth deceleration during COVID-19 pandemic period. These micro enterprises were once growing. But, due to challenges posed by demonetisation and imposition of GST, there has been growth deceleration across a few industry groups during 2018-19 to 2019-20 period. But, with sudden onslaught of COVID-19 pandemic, these micro enterprises witnessed severe deceleration in their growth pattern. The fall in growth has been so severe that they recorded sharp recovery after the pandemic. Still, they lag behind due to after effects of COVID-19 pandemic. Such experience has been uniform across all types of micro enterprises. Larger ones could manage to some extent but they also remain severely affected and as a consequence, they have witnessed severe fall in their output growth.

Table 5: Output Growth (%) Trend among Sample Industries

Industry Type	Location	2017-18 to 2018-19	2018-19 to 2019-20	2019-20 to 2020-21	2020-21 to 2021-22
Agro and Food Products	Rural	14.83	10.33	-50.43	49.76
	Urban	16.27	-9.99	-38.78	27.38
Textiles	Rural	6.89	-9.36	-54.79	92.79
	Urban	-6.15	-35.34	-29.54	58.40
Handicrafts	Rural	-7.12	-20.20	-46.66	83.33
	Urban	-10.51	-40.99	-11.51	72.21
Metals	Rural	12.10	0.88	-43.48	18.27
	Urban	-36.32	-13.51	-50.42	37.69
Mineral-based	Rural	10.98	-32.90	-30.65	65.32
	Urban	-16.18	-4.40	-79.94	73.70
Stone-based	Rural	4.43	-21.09	-59.55	14.07
	Urban	8.53	-30.20	-66.71	29.99
Engineering	Rural	5.76	3.80	-59.75	61.37
	Urban	19.48	-30.13	-64.50	34.68
Electric Equipment	Rural	1.05	1.46	-52.82	67.64
	Urban	39.31	-37.52	-48.43	85.07
Readymade Garments	Rural	-9.68	-47.64	-50.52	15.77
	Urban	70.22	-10.55	-70.65	19.76
Gems and Jewellery	Rural	-15.52	-49.85	-19.85	39.38
	Urban	-11.96	-19.70	-30.36	37.87

Source: Based on Primary Survey

D. Exposure to Growth Impediments

Shortage of raw materials remained a major problem. It has been reported as a major problem by 21.90 percent micro enterprises. In handicrafts industry, 34.67 percent micro enterprises reported shortage of raw materials as a major problem. Similar is the case with micro enterprises in textile industry, agro and food products and mineral-based industry. An analysis across location reveals that among those reporting raw material shortage as a major problem, a majority belong to rural areas. Similarly, these are micro enterprises with relatively low investment in plant and machinery that have reported the problem of raw material shortage.

Declining sales has been a major problem during COVID-19 pandemic. 55.70 percent of sample micro enterprises reported it as a major problem. The highest proportion of micro enterprises, reporting it as a major problem, belong to electrical equipment industry (81.82 percent), gems and jewellery industry (78 percent), engineering industry (70.33 percent), metals (65.17 percent), stone-based industries (58.82 percent) and handicrafts (57.33 percent). In mineral-based industries, a relatively small proportion of micro enterprises reported declining sales as a major problem. Similarly, in industries like textiles, agro and food products, readymade garments, declining sales has been reported by a relatively small proportion of the sample micro enterprises. An examination across location, ownership type and plant size reveal that declining sales has been almost a universal problem across all types of categories. It may be primarily due to restrictive environs posed by COVID-19 pandemic in which almost all the micro enterprises have faced the problem of declining sales.

Credit unavailability did not get reported as a major problem as micro enterprises have learned from their experience that getting credit is not that easy (Verma, 2021). So, they did not bother much about it especially when there were other pressing problems. Same got reflected in the survey data. 2.50 percent of sample micro enterprises recorded credit unavailability as a major problem. Surprisingly, in industries like gems and jewellery, no micro enterprise recorded credit unavailability as a major problem. Similar is the case with others. Overall, it has been the readymade garments industry where 11.11 percent micro enterprises reported the problem of credit unavailability. Other industries where micro enterprises recorded this problem are related to metals, engineering, handicrafts and agro and food products.

Labour shortage emerged as a major problem in stone-based industries where about one-fifth of the sample micro enterprises reported such problem. Similar is the case with mineral-based industries where 15.79 percent recorded labour shortage as a major problem. Other industries recording labour shortage as a major problem have been readymade garments and textiles. An analysis by location reveals that micro enterprises situated in rural areas experienced a relatively high incidence of labour shortage. Similarly, these were the micro enterprises with investment in plant & machinery above Rs. 10 lakh which constitute a majority among those experiencing the problem of labour shortage. In industries like metals, electronics, agro and food products, labour shortage is faced by all the micro enterprises having investment in plant and machinery below Rs. 1 lakh.

V. Resilience among Rajasthan's Micro Enterprises

A. Preliminary Evidence on Fragile State of Rajasthan's Micro enterprises

Survey results hint at fragile state of Rajasthan's micro enterprises. In terms of resource adequacy, a majority of these enterprises experience low abilities regarding access to sufficient working capital or raising funds at times of need or easy access to quality raw materials. In terms of technical edge, these enterprises are relatively better placed but abilities of a majority vary between low and medium levels. Same is the case with market knowledge and commercial prudence. In terms of product uniqueness, i.e. abilities to design and innovate products as per customers' taste, they are relatively better placed. But, in terms of manpower planning and networking, a majority again suffers from low abilities (table 6).

Table6: Percentage Share of Rajasthan's Micro Enterprises Response to Various Queries Defining Resilience

		Low	Medium	High
Resource Adequacy	Sufficiency of Working Capital	71.0	19.7	9.3
	Ability to Raise Funds when Needed	61.0	26.9	12.1
	Easy Access to Quality Raw Materials	55.1	35.1	9.8
Technical Edge	Knowledge & Adoption of Latest Production Technique	20.1	42.5	37.4
	Worker Adoption & Adaptability to New Techniques	34.9	35.7	29.4
	Capacity to Raise Production Efficiency	21.9	38.8	39.3
Market Knowledge	Knowledge of Market Size, Customers' Taste & Demand	24.1	47.5	28.4
	Competitors' Threat	20.9	45.3	33.8
Product Uniqueness	Ability to Design Products as per Customers' Demands	7.1	30.1	62.8
	Ability to Innovate in Product Design	24.4	42.0	33.6
Commercial Prudence	Ability to Lower Cost with Same Quality	45.7	46.8	7.5
	Ability to Foresee Future Demand	21.8	55.8	22.4
Manpower Planning	Adequate Access to Skilled Manpower	36.0	32.1	31.9
	Possibility of Outsourcing Production	65.1	28.6	6.3
Networking	Ability to Develop Sound Networks	58.3	33.7	8.0
	Ability to Enhance Market Coverage	37.4	28.2	34.4

Source: Based on Primary Survey

Overall, a majority of micro enterprises, across large number of queries, have reported low to moderate abilities which indicates fragile state of these enterprises. However, to arrive at a certain statistic, responses to these queries are aggregated and averaged to arrive at a measure of resilience which is discussed below.

B. Magnitude of Resilience

Table 7 depicts average resilience level of Rajasthan's micro enterprises across sample industry groups vis-à-vis their selective characteristics of location, ownership and

investment in plant and machinery (P&M). It may be observed that average resilience level among sample industries has been low. In fact, these are the micro enterprises in mineral-based industry that has reported a relatively high level of resilience (3.01), otherwise in all other industries, resilience levels have remained within 2.74 to 2.90 range which is really very low and a cause for concern.

Table 7: Specific Characteristics and (Mean) Resilience across Industries

Industry Type	All	Location		Ownership		Investment in P&M		
		R	U	M	F	<Rs. 1 Lakh	Rs. 1-10 Lakh	> Rs. 10 Lakh
Agroand Food Products	2.80	2.81	2.78	2.83	2.56	2.76	2.85	2.93
Textiles	2.90	2.84	3.09	2.97	2.73	2.67	3.10	3.06
Handicrafts	2.74	2.94	2.85	2.88	2.63	2.74	2.69	0.0
Metals	2.87	2.67	2.80	2.72	2.76	2.82	2.98	2.93
Mineral-based	3.01	3.01	3.04	3.02	2.67	2.63	2.96	3.03
Stone-based	2.87	2.86	3.09	2.86	2.87	2.75	2.87	2.88
Engineering	2.80	2.79	2.88	2.81	2.69	2.71	2.82	2.96
Electronics	2.89	2.80	2.95	2.89	2.81	2.88	2.95	0.0
Readymade Garments	2.90	2.90	2.91	3.03	2.56	2.80	3.00	3.18
Gems and Jewellery	2.79	3.50	2.78	2.82	2.64	2.79	0.0	0.0
All	2.86	2.85	2.86	2.89	2.69	2.77	2.91	3.00

Note: R – Rural; U – Urban; M – Male; F – Female; P & M – Plant & Machinery
Source: Based on Primary Survey

Analysis across location place, on an average, rural and urban micro enterprises similarly but with significant differences in industries like textiles, stone-based industries and electronics. Female-owned micro enterprises across all industry groups have relatively lower resilience levels than male-owned enterprises. Similarly, a classification by plant size informs that micro enterprises with a relatively high investment in plant & machinery are relatively more resilient. There are industry-wise variations but on an average, the situation is worse for micro enterprises with relatively small investment in plant and machinery.

C. Determinants of Firm-level Resilience

Ordered Probit Model estimates for three models are presented in Table 8. Likelihood ratio chi-square of all three models with p-value of 0.0000 indicates that three models as a whole are statistically significant. In Model 1, all factors are statistically significant. In Model 2, all factors are statistically significant except enterprise age and place of work – which is omitted by regression due to collinearity. Similarly, in Model 3, all factors are statistically significant except owner’s education, social class, age of enterprise and firm’s practice of working for large units which implies that these factors are not so important factors in determining firm’s resilience level.

Table 8: Ordered Probit Model Estimates

	Model 1		Model 2		Model 3	
	β	S.E.	B	S.E.	β	S.E.
Owner's Gender (female=1, rest=0)	-.332663*	.110041			-.261080**	.126801
Owner's Education (Secondary=1, rest=0)	-.160594**	.075765			-.113006	.085732
Owner's Social Class (SC/ST=1, rest=0)	-.249301**	.113654			-.10713	.130864
Owner's Skill Level(Un/semi-skilled=1, rest=0)	-.738160*	.218002			-1.00876*	.229286
Age of Enterprise (Upto 10 Years=1, rest=0)			-.041054	.077956	-.030061	.078762
Enterprise Location (Rural=1, rest=0)			.323679*	.081991	-.332001*	.086967
Place of Work (Within Household=1, rest=0)			Omitted due to collinearity		-.176942** *	.101951
Capital Size (Upto Rs. 1 lakh=1, rest=0)			-.272179*	.094240	-.204511**	.100142
Working for Large Units (No=1, rest=0)			.178713**	.079552	.100446	.082657
Keep Accounts (No-1, rest=0)			-1.59631*	.127753	-1.61044*	.129679
/k ₁	-.227841	.060829	-.610470	.116205	-.832461	.131495
/k ₂	.525880	.062061	.229286	.115470	.023581	.130016
Number of Observations	1000		1000		1000	
LR chi ² (N)	40.59 (4)		223.86(6)		251.30 (10)	
Prob > chi ²	0.0000		0.0000		0.0000	
Pseudo R ²	0.0195		0.1073		0.1204	
Log Likelihood	-1023.1031		-931.4687		-917.7519	

Note: *, **, *** imply that the estimated coefficients are significant at 1%, 5% and 10% level of significance.

Source: Based on Primary Survey

On an average, female-owned enterprises have, ceteris paribus, a lower probability of having high resilience in comparison to male-owned enterprises. Firms whose owners are either unskilled or semi-skilled have, ceteris paribus, a lower probability of having high resilience than skilled owners. Firms located in rural areas are similarly worse than their urban counterparts. The factor of 'place of work' which got omitted in Model 2 is found to be significant at 10 percent level in Model 3 which indicates that household-based firms have lower probability of having high resilience than firms located in commercial/industrial areas. Firms with capital size below Rs. 1 lakh has similar disadvantage. Firms that do not keep accounts have lower probability of having high resilience than firms keeping accounts.

It needs to be noted that Model 3 does not consider factors such as owner's education, social class, age of enterprise and firm's practice of working for large units, as significant factors influencing resilience. Such inferences emerge due to the fact that COVID-19

crisis has brought challenges for all kinds of enterprises and its impact has been non-discriminatory in nature.

Table 9: Marginal Effects (Model 3) of the Ordered Probit Model

	Low	Moderate	High	Sum
Owner's Gender (female=1, rest=0)	0.102951	-0.03909	-0.06386	0.0000
Owner's Education (Secondary=1, rest=0)	0.045034	-0.01469	-0.03034	0.0000
Owner's Social Class (SC/ST=1, rest=0)	0.042576	-0.01505	-0.02753	0.0000
Owner's Skill Level (Un/semi-skilled=1, rest=0)	0.342389	-0.17888	-0.16351	0.0000
Age of Enterprise (Upto 10 Years=1, rest=0)	0.011979	-0.004	-0.00798	0.0000
Enterprise Location (Rural=1, rest=0)	0.131827	-0.04135	-0.09047	0.0000
Place of Work (Within Household=1, rest=0)	0.070475	-0.02262	-0.04786	0.0000
Capital Size (Upto Rs. 1 lakh=1, rest=0)	0.081383	-0.02676	-0.05463	0.0000
Working for Large Units (No=1, rest=0)	-0.04002	0.013189	0.026835	0.0000
Keep Accounts (No-1, rest=0)	0.521996	-0.24931	-0.27268	0.0000

Source: Derived as post-estimation of ordered probit regression.

Table 9 presents marginal effects of Model 3 presented above. It may be concluded that as compared to male-owned enterprises, female-owned enterprises decrease the probability of having high resilience by 6.38%. In comparison to skilled owners, unskilled/semi-skilled owners decrease probability of having high resilience by 16.35%. Probability of rural enterprises, compared to urban ones, to have low resilience increases by 13.18%. Probability of household-based firms, compared to others, to have low resilience increases by 7.04%. Probability of firms with capital size upto Rs. 1 lakh, compared to others, to have low resilience increases by 8.13%. Similarly, probability for firms not keeping accounts, compared to others, to have low resilience rises by 52.19%.

VI. Summing-Up

Based on a primary survey of 1000 micro enterprises spread across ten industry groups, this study has addressed the plight of Rajasthan's micro enterprises during COVID-19 crisis. It has examined how firms experienced a fall in their production, sales and employment. It has also estimated the magnitude of losses incurred by firms. Similarly, it has also examined the incidence of growth deceleration experienced by Rajasthan's micro enterprises over 2017-18 to 2021-22 period. In fact, onslaught of COVID-19

pandemic was a sudden shock that destabilised micro enterprises. In such a situation, it has been the resilience that could protect these firms from severe fall. In the absence of any yardstick to measure firm's resilience, which is a qualitative concept, this study makes a noble contribution to existing literature by not only conceptualising firm's resilience but also by tracing its magnitude across a large sample of micro enterprises in Rajasthan. By applying Ordered Probit Model, it examines the determinants of firm's resilience. Three different models are estimated to infer the impact of different characteristics on resilience. Marginal effects, arrived as post-estimation of Ordered Probit Model, indicate how various characteristics impact firm's resilience.

Some conclusions that emerge from the analysis are: 1) micro enterprises in Rajasthan like elsewhere have experienced the pangs of COVID-19 pandemic by recording a fall in production, sales and employment; 2) losses recorded during the pandemic have been of high magnitude; 3) Rajasthan's micro enterprises, prior to pandemic, were having sluggish growth but pandemic led to severe growth deceleration which started picking-up in post-COVID period; 4) micro enterprises faced serious growth challenges during pandemic; 5) Rajasthan's micro-enterprises do not have adequate resilience to withstand any shock; 6) resilience gets influenced by various owner-related and firm-related characteristics; 7) disturbance caused by COVID-19 pandemic will cause serious damage in the long-run if resilience levels of micro enterprises are not augmented. For this, there is a need to adopt appropriate policy framework that should focus on not only building capacities of micro enterprise owners but also provide them with adequate resources, technology and technical know-how.

References

- Alon, T. et al. (2021) Macroeconomic Effects of COVID-19 across the World Income Distribution, Mimeo, International Monetary Fund.
- Bajra, U.Q. et al. (2023) COVID-19 Pandemic-related Policy Stringency and Economic Decline: Was It Really Inevitable? *Economic Research*, 36(1): 499-515.
- Becker, W.E. and Kennedy, P.E. (1992) A Graphical Exposition of the Ordered Probit, *Econometric Theory*, 8(1): 127-131.
- Behera, M. et al. (2020) COVID-19 Pandemic and Micro, Small and Medium Enterprises (MSMEs): Policy Response for Revival, *SEDME (Small Enterprises Development, Management & Extension Journal)*, 47(3): 213-228.
- Chambers, R. (1989) Vulnerability, Coping and Policy, *IDS Bulletin*, 20(2): 1-7.
- GAME (2022) Road to Recovery: Examining the Impact of COVID-19 on Micro businesses in India, LEAD at Krea University (IFMR) and Global Alliance for Mass Entrepreneurship.
- Ghosh, S. (2020), Examining the Covid-19 Relief Package for MSMEs. *Economic and Political Weekly*, 55(2), 10-21.
- GoI (2022) Annual Report 2021-22, Ministry of Micro, Small and Medium Enterprises, Government of India, New Delhi.
- Hayakawa, K. et al. (2022) The Effect of COVID-19 on Foreign Direct Investment, ADB Economics working paper no. 653, Asian Development Bank.
- ILO (2021) ILO Monitor: COVID-19 and the World of Work, Seventh Edition, International Labour Organisation.
- Indrakumar, D. (2020) COVID-19 and Its Impact on Micro, Small and Medium Enterprises in India, *Manpower Journal*, LIV(3&4): 75-88, July-December.
- IMF (2023) World Economic Outlook, International Monetary Fund, Geneva.
- Jain, V. (2021a) Making Punjab's Urban Informal Sector More Resilient while Securing Livelihoods during Post-COVID-19 Times, pp. 91-101, in Singh, S. et al. (eds. *COVID-19 Pandemic and Economic Development: Emerging Public Policy Lessons for Indian Punjab*, Singapore: Palgrave macmillan.
- Jain, V. (2021b) Sports Equipment Manufacturing in India: A Firm-level Inquiry into Growth and Employment Dynamism, page 129-152, in Nagaraj, R. (ed.) *Industrialisation for Employment and Growth in India: Lessons from Small Firm Clusters and Beyond*, Cambridge University Press, U.K.
- Jain, V. and Singh, L. (2020) Global Spread and Socio-economic Determinants of COVID-19 Pandemic, *Seoul Journal of Economics*, 33(4): 561-600.
- Kaye, A.D. et al. (2021) Economic Impact of COVID-19 Pandemic on Healthcare Facilities and Systems: International Perspectives, *Best Practice & Research Clinical Anaesthesiology*, Vol. 35, pp. 293-306.

McKibbin, W. and Fernando, R. (2021) The Global Macroeconomic Impacts of COVID-19, Seven Scenarios, *Asian Economic Papers*, 20(2): 1-30.

Mehta, S. (2021) COVID-19 and MSMEs in Punjab: Challenges Ahead, pp. 103-114, in Singh, S. et al. (eds. *COVID-19 Pandemic and Economic Development: Emerging Public Policy Lessons for Indian Punjab*, Singapore: Palgrave macmillan.

NSSO (2015-16) Economic Characteristics of Unincorporated Non-Agricultural Enterprises (Excluding Construction) in India, NSS 73rd Round, July 2015 – June 2016, National Sample Survey Office, Ministry of Statistics and Programme Implementation, Government of India.

OECD (2021) OECD Employment Outlook 2021, Organisation for Economic Cooperation and Development.

Rathore, U. and Khanna, S. (2021) Impact of Covid-19 on MSMEs: Evidence From A Primary Firm Survey in India, *Economic and Political Weekly*, 56(24): 28-38.

Roy, A. et al. (2020) Impact of COVID-19 Crisis on Indian MSME Sector: A Study on Remedial Measures, *Eurasian Chemical Communications*, 2(9): 991-1000.

Saritha, M. (2022) Impact of COVID-19 on MSME Sector in India: A Literature Review, *International Journal of Economics and Financial Issues*, 12(6): 45-51.

Sharma, A.K. and Rai, S.K. (2022) Understanding the Impact of COVID019 on MSMEs in India: Lessons for Resilient and Sustained Growth of Small Firms, ISID Working Paper No. 243, February, Institute for Studies in Industrial Development, New Delhi.

UNCTAD (2022a) Impact of the COVID-19 Pandemic on Trade and Development: Lessons Learned, United Nations Conference on Trade and Development.

UNCTAD (2022b) The COVID-19 Pandemic Impact on Micro, Small and Medium Sized Enterprises: Market Access Challenges and Competition Policy, United Nations Conference on Trade and Development.

Verma. S. (2021) Implementation of Emergency Credit Line Guarantee Scheme (ECLGS) in Punjab: An Assessment of Performance of Scheduled Commercial Banks, pp. 115-124, in Singh, S. et al. (eds. *COVID-19 Pandemic and Economic Development: Emerging Public Policy Lessons for Indian Punjab*, Singapore: Palgrave macmillan.

Endnotes

¹Varinder Jain is working with the Institute of Development Studies, Jaipur. He may be reached at vjain2007@gmail.com

²This paper emerges out of Government of Rajasthan's (GoR) sponsored research study on, '*COVID-19 Shock, Survival & Revival of MSMEs in Rajasthan: Focus on Growth, Resilience & Delayed Payments*'. An earlier version of this paper is presented in Institute of Development Studies, Jaipur on September 02, 2022.

³NSSO's 73rd Round (2015-16) and GoI (2022).

⁴With effect from the mid-night of 8th November, 2016, the government of India announced the demonetisation of Rs. 500 and Rs. 1000 currency notes. They ceased to be recognised as legal tender from this date.

⁵With effect from July 01, 2017, Goods and Services Tax (GST) came into effect.

⁶Beginning March 25, 2020, lockdowns were imposed in the country several times to curb the spread of COVID-19 infections.

⁷Global Alliance for Mass Entrepreneurship (GAME) in its nation-wide study on Indian MSMEs points out that 14 percent MSMEs have exited business permanently during COVID-19 pandemic period. It also observes that 50 percent of the micro firms had no coping strategies (GAME, 2022).

⁸Stringency Index emanates from Oxford Corona virus Government Response Tracker project. It is a composite measure of responses to nine metrics, viz. school closures, workshop closures, cancellation of public events, restrictions on public gatherings, closures of public transport, stay-at-home requirements, public information campaigns, restrictions on internal movements and controls on international travels.

⁹Saritha (2022) provides a brief literature review of the impact of COVID-19 on India's MSME sector.

¹⁰The primary survey was conducted during May-July, 2022.

IDSJ Working Paper

- WP146** Upstream vs Downstream : Groundwater Augmentation through Rainwater Harvesting and its Implications for Agricultural Development by Sunil Ray and Mahendra Bijarnia, September 2005.
- WP147** Growth Poverty Interface in Rajasthan : A Tale of Two World Bank Studies by Vidya Sagar, January 2006.
- WP148** Body as Site, Body as Space. Bodily integrity and Women's Empowerment in India by Kanchan Mathur, June 2007.
- WP149** Agrarian Crisis and National Commission for Enterprises in the Unorganized Sector : Recommendation VERSUS Reality by Mohanakumar S., December 2009.
- WP150** Economic Performance of Rajasthan : Status and Constraints by Surjit Singh, January 2010.
- WP151** Identification of the Poor : Errors of Exclusion and Inclusion by Motilal Mahamallik and Gagan Bihari Sahu, February 2010.
- WP152** Gender Gap in Adult Malnutrition : How Does India Fare ? by Sunny Jose G, March 2010.
- WP153** Urban Labour Markets and Returns to Migration : Destination Surat by Gagan Bihari Sahu and Biswaroop Das, April 2010.
- WP154** Depleting Water Resource in Urban Area by K.N. Joshi, July 2010.
- WP155** Impact of Economic Crisis on Workers in the Unorganised Sector in Rajasthan by Mohanakumar S. and Surjit Singh, November 2010.
- WP156** The Limits to Agriculture Development under Decentralised Governance in a Globalised Market by Mohanakumar S. and R. Vipinkumar, December 2010.
- WP157** Managing Risk for Indian Farmers is Weather Insurance Workable by Surjit Singh and R. L Jogi, May 2011.
- WP158** Plantation Crops under Trade Liberalisation, Analysis in the Context of Indo-ASEAN FTA by Mohanakumar S. August 2011.
- WP159** How Empowered is Microfinance in Empowering Women ? Evidence from India by Gagan Bihari Sahu and Surjit Singh, September 2011.
- WP160** Recent Labour Market Experiences from China by Surjit Singh, October 2011.
- WP161** Emerging Patterns of Income and Consumption in Rural-Urban China by Surjit Singh, November 2012.
- WP162** Medium Term Expenditure Framework : Lessons for Water Sector in Rajasthan by Surjit Singh, Praveen Jha and K.N. Joshi, December 2012.
- WP163** Innovations, Finance, Employment and Social Security : Some Views by Surjit Singh, January 2013.
- WP164** Engendering the Education Landscape : Insights from Policy and Practice by Shobhita Rajagopal, February 2013.
- WP165** India and Knowledge Economy : Prospects for Development by Surjit Singh, March 2013.
- WP166** Migration and Punjab: Some Perceptions by Surjit Singh, March 2013.
- WP167** India China Bilateral Relations : Dragon and Elephant's Engagements by Surjit Singh, May 2013.
- WP168** India-US Strategic Partnership : Issues, Challenges and Future by B.M. Jain, June 2013.
- WP169** Poverty Estimates and Sampling Design of NSSO: An Exploratory Analysis by S. Mohanakumar, June 2013.
- WP170** Efficacy of Equity Principle : Re-examining the Issue in Indian Fiscal Federalism by Motilal Mahamalik & Pareshwar Sahu, October 2013.
- WP171** Women Engaging Politically in Rajasthan Finding Spaces through Winding Paths of Power by Kanchan Mathur, October, 2014.
- WP172** Political Economy of Natural Rubber Cultivation in Tripura by S. Mohanakumar, December, 2014.
- WP173** Tenancy Relations in India : Observations from a field study by S. Mohanakumar, December, 2014.
- WP174** Rural Labour Market and Farmers under MGNREGS in Rajasthan by S. Mohanakumar, December, 2015.
- WP175** Persisting Inequalities : Gender and Land Rights in Rajasthan by Kanchan Mathur, December, 2016.
- WP176** Right to Education Challenges and Pathways to Realising the Entitlement in Rajasthan by Shobhita Rajagopal, December, 2016.
- WP177** 21st Century Industrialisation in India Opportunities, Threats & the Role of MSMEs by Varinder Jain, December, 2018.
- WP178** Dairy Farmers under Neoliberal Trade Reforms in India: Analysis of Milk Production sector, by S.Mohanakumar, December, 2018.
- WP179** COVID-19 : Navigating Digital Learning in Government Schools in Rajasthan : Voices from the Field by Shobhita Rajagopal and Mukta Gupta, July, 2020.
- WP180** Deprivation and Inequality Among SCs and STs in Rajasthan : Institute of Development Studies, Jaipur by S. Mohanakumar, December, 2020.
- WP181** Addressing Gender Inequalities in Secondary Education COVID-19 : Institute of Development Studies, Jaipur by Shobhita Rajagopal, Kanchan Mathur and Vasudha Chakravarthy, August, 2021.
- WP182** Cost of Milk Production in India: A Study of Major Milk Producing States. S. Mohanakumar, Institute of Development Studies, Jaipur, July 2021.
- WP183** COVID-19 and Maternal and Child Health Services in Rajasthan : Challenges and Strategic Policy Adaptations, Kanchan Mathur, Vasudha Chakravarthy and Shobhita Rajagopal, Institute of Development Studies, Jaipur, December 2021.
- WP184** Rethinking Social Security Provision for Informal Workers Case for a Needs-Based Approach, Varinder Jain, Institute of Development Studies, Jaipur, Rajasthan (India), June, 2022.
- WP185** Analysis of Trends in Smart Agricultural Transformation in India, S. Mohanakumar, February, 2022.
- WP186** Corrective Macroeconomic Measures in India : The Strategy During a pandemic-Driven Recession and Beyond, Motilal Mahamallik, Pareswar Sahu, March, 2023.

For further information, please contact Ms. Asha Tekchandani, Librarian (I/C) at the institute's address or email : library@idsj.org